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AROCLOR

MINUTES

WILDLIFE; REVIEW OF BIO-TEST STUDIES

MONSANTO GENERAL OFFICES
MEDICAL DEPARTMENT
ST. LOUIS, MISSOURI

September 19, 1969

TO:

Those Present	Not Present
M. W. Farrar	W. R. Richard
W. H. Hunt	
R. E. Keller	
R. E. Kelly	
E. S. Tucker	
E. P. Wheeler	

The above attendees reviewed with O. E. Fancher, Director, Industrial Bio-Test Laboratories, the biological results to date of their feeding studies and the consolidation of tissue samples for residue analysis by the Analytical Group of the Applied Sciences Section.

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A detailed analysis of the currently planned analytical support work for the Aroclor - Wildlife project was prepared for this meeting, Table I. The analysis includes a listing of studies, manpower requirements and a dollar cost for the analytical support of each study. In brief, it was ascertained that there were at least five separate Bio-Test feeding studies in progress or planned which would require 105 man weeks to analyze the estimated 1340 samples being generated, at a cost of $63,000. An additional $18,000 of work not involving Bio-Test is also outlined in the Table.

Meeting Objectives

I. Review Bio-Test feeding studies with special regard to the scheduling and reduction of the number of samples to be analyzed.

II. Status review of the biological results, to date, of Aroclor - Wildlife Bio-Test feeding studies.

With these facts in mind, each Bio-Test study listed in Table I was critically reviewed to determine if the number of samples requiring residue analysis could be decreased without appreciably effecting the results.

1. Rat Tissue Study

   Actions: - Delete residue analysis of rats fed chlorinated naphthalenes and pesticides.

   Pool male and female animals.

2. Chicken Toxicity, Reproduction, and Meat and Egg Residue Study

   Actions: - Pool larger numbers of eggs.

   - Analyze only fat, muscle, and liver tissues.

   - Restrict analysis to one, no effect level for each Aroclor.

3. Mallard Duck Study

   Action: - Equivalent to Study No. 2.

4. Two Year Chronic Toxicity in Rats

   Actions: - Delete 9 month sacrifice.

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Actions: (Cont'd)
- Pool all male and female animals.
- Restrict analysis to one, no effect level for each Aroclor.

5. Fish Toxicity Study

Actions:
- None; study design requires this number of samples.

6. Rat Reproduction Study

Actions:
- Addition of 2nd litter, 1st generation, rat pups to be analyzed.

7. Two Year Chronic Toxicity Study in Dogs

Actions:
- Addition of selected tissues for residue analysis.

TABLE II
AROCLOR - WILDLIFE ANALYTICAL SUPPORT REVISED
(Bio-Test Section Only)

		No. Samples	Man Weeks	$ Cost
I.	Residue Determinations			
A.	Biological Residues (Bio-Test)			
1.	Rat Tissue Study	40	3	1,800
2.	Chicken Toxicity, Reproduction, and Meat and Egg Residue Study	96	8	4,800
3.	Mallard Duck Study	96	8	4,800
4.	Two Year Chronic Toxicity in Rats	160	12	7,200
5.	Fish Toxicity Study	60	9	5,400
6.	Rat Reproduction Study	10	1	600
7.	Two Year Chronic Toxicity Study in Dogs	40	3	1,800
		502	44	26,400

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It is important to note that neither Table I nor the revision take into account work done by the Spectroscopy Group (GC/Mass), duplicate analysis of samples, nor any additional method development required.

The results, to date, of the biological studies were issued in progress reports distributed by Dr. Fancher.

Additionally, arrangements were made to have Bio-Test store tissue samples in Chicago until they can be analyzed.

E. S. Tucker

db
Attachment

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		Charges	No. Samples	Man Weeks	Anal. Cost ($)
I.	Residue Determinations				
	A. Biological Residues (Bio-Test)				
	1. Rat Tissue Study	Reg.	160	12	7,200
	2. Chicken Toxicity, Reproduction and Meat and Egg Residue Study	Reg.	360	27	16,200
	3. Mallard Duck Study	Reg.	360	27	16,200
	4. Two Year Chronic Toxicity in Rats	Reg.	400	30	18,000
	5. Fish Toxicity Study	Reg.	60+	9	5,400
			1,340	105	63,000
	B. Environmental Residues				
	1. Outside				
	a. Lake Michigan WARF Study	Reg.	12+MD	2	1,200
	b. Detergents & Components	Inorg.	20+MD	3	1,800
	2. Monsanto				
	a. Anniston - Water/ Sediment/Fish	Mfg.	14 in hand	1	600
	b. WGK - Water/Sediment	Mfg.	13 in hand	1	600
	c. Pensacola - Water/ Sediment/Fish	Reg.	12 in hand	1	600
	d. Ruabon - Sediment	Reg.	4 in hand	1	600
	e. Florida - Soil Poison Test Samples (Soil)	Reg.	45 X 2	5	3,000
			165	14	8,400
II.	Special Studies				
	A. Ultraviolet Degradation of PCBs, et al	Reg.	MD	4	2,400
	B. Water Extractability of PCBs from Painted Surface	Reg.	MD	3	1,800
	C. Characterization of Competitive PCB Products	Reg.	MD	1	600
	D. Analysis of Auto Exhausts for PCBs	Reg.	MD	1	600
	E. Analysis of Pesticides for PCBs	Reg.	MD	3	1,800
	F. Determination of the Quarter Phenyl Content of Aroclor 5460	Reg.	MD	4	2,400
			-	16	9,600
	TOTALS:		1505	135	81,000

Assumption - 3 hr./sample
$15/hr. = $600/wk.

MD - Method Development

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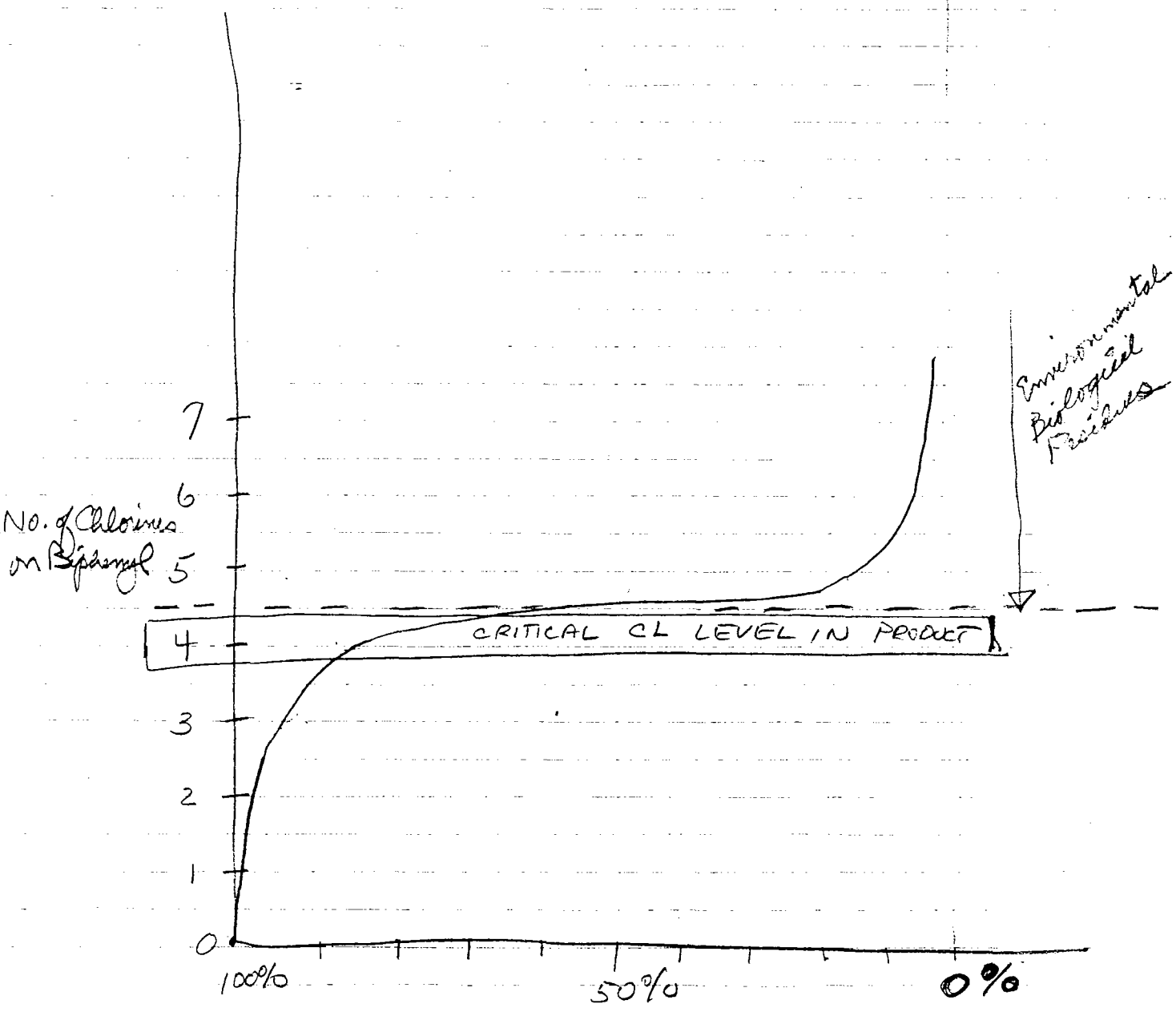
No. of Chlorines on Biphenyl
7
6
5
4
3
2
1
0
CRITICAL CL LEVEL IN PRODUCT
Environmental Biological Problems
100%
50%
0%
Biodegradability Rate Relative to Biphenyl

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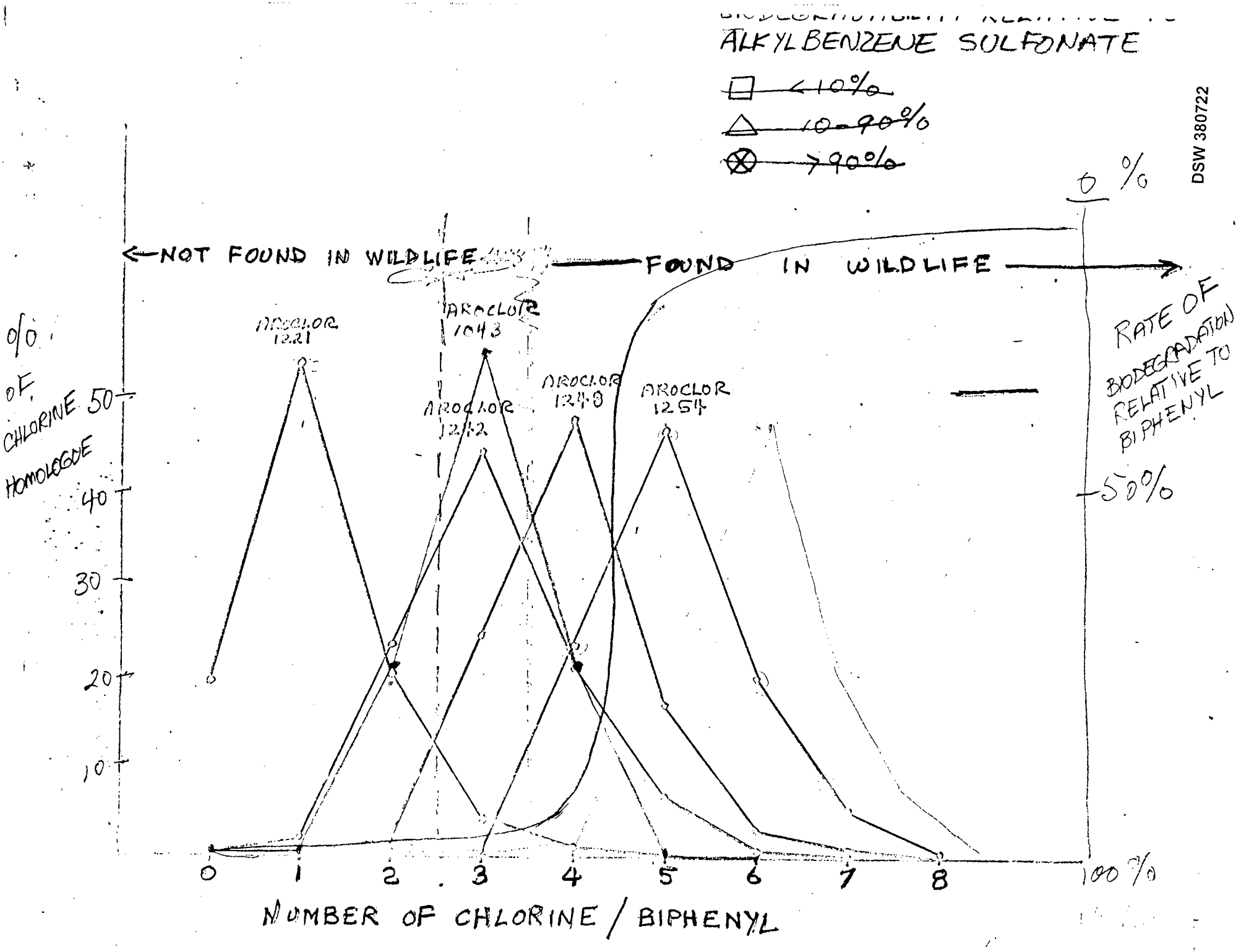

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	100	80	60	40	20	2	1	0
	0	1	2	3	4	5	6	7
Decision 1242	0	1	16	49	25	9	1	0
MCS 1016	0	1	20	57	21	1	0	0
MCS 1043	0	~~27~~	~~32~~ 19	~~36~~ 3	0	0	0	

Decision 1242

100	100	0	100
75	70	75	75
50	40	800	50
25	10	1225	25
10	5	250	15
5	2	45	10
1	1	61	5
		7 2396	1

34.2

100	× 0	= 100
80	× 1	= 80
60	× 16	= 960
40	× 49	= 1960
20	× 25	= 500
2	× 9	= 18
1	× 1	= 1

7 3619

5.7 %

100	=	~~100~~ 0
75		70
~~800~~		640
1225		490
375		125
90		18
8		1

7 2670

38%

7 1444

21%

MCS 1016

		Lt	%	Comp		Dan	~~% Comp~~
100	0	0	100	0	= 0	100 0	= 0
75	1	1	75	1	= 75	75 1	= 75
50	16	2	50	16	= 800	50 20	= 1000
25	49	3	~~25~~	49	= 1568	32 57	= 1824
15	25	4	20	25	= 500	20 21	= 420
10		5	7	9	= 63	7 1	= 7
		6	4	1	= 4	4 0	=
		7			7 20.10	288	6 3326

~~28.7~~

29%

~~55%~~

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